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Oceanography: A Bibliography of Selected Activation Analysis Literature

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Oceanography: A Bibliography of Selected Activation Analysis Literature

G. J. Lutz, Editor

Analytical Chemistry Division
Institute for Materials Research
National Bureau of Standards
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Elements in Metals: A Bibliography of Activation
Analysis Papers, NBS Technical Note 524, May 1970.
75 cents.*
3. Lutz, G. J., Editor. Pollution Analysis: A Bibli-
ography of the Literature of Activation Analysis.
NBS Technical Note 532, June 1970. 45 cents.*
4. Lutz, G. J., Editor. 14-MeV Neutron Generators in
Activation Analysis: A Bibliography, NBS Technical
Note 533, June 1970. \$1.00.*

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Trends in Activation Analysis, Proceedings of the
1968 International Conference on Modern Trends in
Activation Analysis, National Bureau of Standards,
Gaithersburg, Maryland, October 7-11, 1968.
NBS Special Publication 312, Vol. I and II, June
1969. \$8.50 per set.*
2. Lutz, G. J., Boreni, R. J., Maddock, R. S. and
Meinke, W. W., Editors. Activation Analysis:
A Bibliography of Activation Analysis Papers, NBS
Technical Note 467 Revised, December 1969. \$8.50.*

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PREFACE

This bibliography is the fifth of a series of bibliographies on the application of Activation Analysis to specific subjects. The bibliographies in this series are produced from the master files of the Analytical Chemistry Division's Activation Analysis Information Center and will be periodically updated.

W. Wayne Meinke, Chief
Analytical Chemistry Division

OCEANOGRAPHY: A BIBLIOGRAPHY OF
SELECTED ACTIVATION ANALYSIS LITERATURE

G. J. Lutz, Editor

The literature of oceanography in activation analysis is reindexed in detail with respect to Element Determined, Matrix Analyzed and Technique Used for precise literature searching. An author index is included.

Key words: Activation analysis; element determined; matrix analyzed; oceanography; technique used.

INTRODUCTION

This publication, Oceanography: A Bibliography of Selected Activation Analysis Literature is one of a series of specialized bibliographies on Activation Analysis, prepared by the Analytical Chemistry Division's Activation Analysis Literature Center.

Publications obtained by the center for inclusion in the Activation Analysis Information and Retrieval Systems are indexed according to the broad categories of Element Determined, Matrix Analyzed and Technique Used. Currently there are 106 descriptive terms under Matrix Analyzed and 53 under Technique Used. Candidates for inclusion in this bibliography were extracted from Matrix Analyzed categories of fish, shellfish, seaweed, marine sediments and seawater. Those publications of interest have been reindexed to more precise and specific literature searching.

An author index has been included. The Center plans to publish revisions to this bibliography as frequently as innovations in the field warrant.

The editors wish to thank Mr. Robert Boreni for his valuable assistance in preparing this bibliography.

OCEANOGRAPHY - ACCESSION NUMBERS

- 9 EHMANN, W.D.
TRACE ELEMENT DETERMINATIONS IN NATURAL MATERIALS
BY ACTIVATION ANALYSIS.
CONF-151-4, (FROM 19TH INTERNATIONAL UNION OF PURE
AND APPLIED CHEMISTRY CONGRESS, LONDON), 22P,
(1963), (ENGLISH), UNIVERSITY OF KENTUCKY,
LEXINGTON, KENTUCKY.
- 164 FUKAI, R. * MEINKE, W.W.
TRACE ANALYSIS OF MARINE ORGANISMS A COMPARISON OF
ACTIVATION ANALYSIS AND CONVENTIONAL METHODS.
LIMNOLOGY AND OCEANOGRAPHY, 4, 398-408 (1959),
(ENGLISH), DEPT, OF CHEMISTRY, UNIV, OF MICHIGAN,
ANN ARBOR, MICHIGAN,
- 165 FUKAI, R. * MEINKE, W.W.
SOME ACTIVATION ANALYSES OF SIX TRACE ELEMENTS IN
MARINE BIOLOGICAL ASHES.
NATURE, 184, 815-816 (1959), (ENGLISH), DEPT, OF
CHEMISTRY, UNIV, OF MICHIGAN, ANN ARBOR, MICH,
- 204 DRESSER INDUSTRIES INC
EQUIPMENT FOR ACTIVATION ANALYSIS OF OCEAN BOTTOM
CURES (ENGINEERING MATERIALS),
CAPE-1010, 46 UNITS, UNDATED. (ENGLISH), DRESSER
RESEARCH, TULSA, OKLA,
- 212 SETSER, J.L.
DETERMINATION OF ZIRCONIUM AND HAFNIUM IN
METEORITES, SEDIMENTS, AND TERRESTRIAL MATERIALS
BY NEUTRON ACTIVATION ANALYSIS.
TID-19179, 81P., 1963, (ENGLISH), KENTUCKY
UNIVERSITY, LEXINGTON, KENTUCKY,
- 235 HUMMEL, R.W.
DETERMINATION OF GOLD IN SEA WATER BY
RADIOACTIVATION ANALYSIS,
ANALYST, 82, 483-488 (1957), (ENGLISH), AERE,
HARWELL, DIDCOT, BERKS, ENGLAND,
- 236 HUMMEL, R.W. * SMALES, A.A.
DETERMINATION OF STRONTIUM IN SEA WATER BY USING
BOTH RADIOACTIVE AND STABLE ISOTOPES,
ANALYST, 81, 110-113 (1956), (ENGLISH), AERE,
HARWELL, DIDCOT, BERKS, ENGLAND,

OCEANOGRAPHY - ACCESSION NUMBERS

- 409 FUKAI, R, * MEINKE, W.W.
ACTIVATION ANALYSES OF VANADIUM, ARSENIC,
MOLYBDENUM, TUNGSTEN, RHENIUM, AND GOLD IN MARINE
ORGANISMS,
LIMNOLOGY AND OCEANOGRAPHY, 7, 186-200 (1962),
(ENGLISH), DEPT, OF CHEM., UNIV, OF MICHIGAN, ANN
ARBOR, MICH,
- 422 RONA, E, * HOOD, D.W, * AKERS, L.K, * MUSE, L.
DETERMINATION OF MANGANESE IN SEA WATER,
PREPRINT, 9P, (ENGLISH), OAK RIDGE INSTITUTE OF
NUCLEAR STUDIES, OAK RIDGE, TENN,
- 470 SMALES, A.A, * MAPPER, D, * WOOD, A.J,
THE DETERMINATION, BY RADIOACTIVATION, OF SMALL
QUANTITIES OF NICKEL, COBALT AND COPPER IN ROCKS,
MARINE SEDIMENTS AND METEORITES,
ANALYST, 82, 75-88 (1957), (ENGLISH), ANALYTICAL
CHEMISTRY GROUP, AERE, HARWELL, NR, DIDCOT, BERKS,
ENGLAND,
- 471 SMALES, A.A, * MAPPER, D, * WOOD, A.J,
RADIOACTIVATION ANALYSIS OF QUOTE COSMIC QUOTE AND
OTHER MAGNETIC SPHERULES,
GEOCHIM, COSMOCHIM, ACTA, 13, 123-126 (1958),
(ENGLISH), AERE, HARWELL, ENGLAND,
- 475 SMALES, A.A, * PATE, B.D,
THE DETERMINATION OF SUB-MICROGRAM QUANTITIES OF
ARSENIC BY RADIOACTIVATION, PART II, THE
DETERMINATION OF ARSENIC IN SEA-WATER,
ANALYST, 77, 188-195 (1952), (ENGLISH), AERE,
HARWELL, ENGLAND,
- 477 SMALES, A.A, * SALMON, L,
DETERMINATION BY RADIOACTIVATION OF SMALL AMOUNTS
OF RUBIDIUM AND CAESIUM IN SEA-WATER AND RELATED
MATERIALS OF GEOCHEMICAL INTEREST,
ANALYST, 80, 37-50 (1955), (ENGLISH), AERE,
HARWELL, ENGLAND,
- 492 STEWART, D.C, * BENTLEY, W.C,
ANALYSIS OF URANIUM IN SEA WATER,
SCIENCE, 120, 50-51 (1954), (ENGLISH), ARGONNE
NATIONAL LAB., LEMONT, ILLINOIS,

OCEANOGRAPHY - ACCESSION NUMBERS

- 586 RONA, E. * HOOD, D.W. * MUSE, L. * BUGLIO, B.
ACTIVATION ANALYSIS OF MANGANESE AND ZINC IN SEA
WATER,
LIMNOLOGY AND OCEANOGRAPHY, 7, 201-206 (1962),
(ENGLISH), OAK RIDGE INSTITUTE OF NUCLEAR STUDIES,
OAK RIDGE, TENN,
- 614 SCHUTZ, D.F. * TUREKIAN, K.K.
THE INVESTIGATION OF THE GEOGRAPHICAL AND VERTICAL
DISTRIBUTION OF SEVERAL TRACE ELEMENTS IN SEA
WATER USING NEUTRON ACTIVATION ANALYSIS,
GEOCHIM. COSMOCHIM. ACTA, 29, 259-313 (1965),
(ENGLISH), DEPARTMENT OF GEOLOGY, YALE
UNIVERSITY, NEW HAVEN, CONN,
- 616 SMALES, A.A. * WISEMAN, J.D.H.
ORIGIN OF NICKEL IN DEEP-SEA SEDIMENTS,
NATURE, 175, 464-465 (1955), (ENGLISH), AERE,
HARWELL, BERKS, ENGLAND,
- 723 BOWEN, H.J.M.
STRONTIUM AND BARIUM IN SEA WATER AND MARINE
ORGANISMS,
J. MAR. BIOL. ASSOC., 35, 451-460 (1956),
(ENGLISH), RADIOBIOLOGICAL RESEARCH UNIT, AERE,
HARWELL, BERKS, ENGLAND,
- 757 KAMEDA, K.
RADIOACTIVATION ANALYSIS OF RARE-EARTH ELEMENTS IN
FISH,
THE THIRD JAPAN CONFERENCE ON RADIOISOTOPES, JRIA
59/P-105, S-5 (1961), (ENGLISH), JAPAN ATOMIC
ENERGY RESEARCH INSTITUTE, HEALTH PHYSICS
DIVISION,
- 758 FUKAI, R.
ACTIVATION ANALYSIS OF TRACE ELEMENTS IN MARINE
ORGANISMS - ESTIMATIONS OF VANADIUM, ARSENIC,
MOLYBDENUM, TUNGSTEN, RHENIUM AND GOLD,
THE THIRD JAPAN CONFERENCE ON RADIOISOTOPES, JRIA
59/P-104, S-4 (1961), (ENGLISH), TOKAI REGIONAL
FISHERIES RESEARCH LABORATORY,
- 961 KEHLER, P. * MONAGHAN, R.
ACTIVATION ANALYSIS OF OCEAN BOTTOM CORES,
TID-18125, 16P., NOVEMBER 1962, (ENGLISH), DRESSER
RESEARCH, TULSA, OKLAHOMA,

OCEANOGRAPHY - ACCESSION NUMBERS

- 1094 CARR, M.H. * TUREKIAN, K.K.
 THE GEOCHEMISTRY OF COBALT,
 GEOCHIM, COSMOCHIM, ACTA, 23, 9-60 (1961),
 (ENGLISH), DEPARTMENT OF GEOLOGY, YALE UNIVERSITY,
 NEW HAVEN, CONN.
- 1125 HAMAGUCHI, H. * KAWABUCHI, K. * ONUMA, N.
 DETERMINATION OF TRACE QUANTITIES OF TIN BY
 NEUTRON ACTIVATION ANALYSIS,
 ANAL. CHIM. ACTA, 30, 335-345 (1964), (ENGLISH)
 (FRENCH AND GERMAN SUMMARIES), DEPARTMENT OF
 CHEMISTRY, TOKYO KYOIKU UNIVERSITY, KOISHIKAWA,
 TOKYO, JAPAN.
- 1127 HAMAGUCHI, H. * KURODA, R. * HOSOHARA, K. *
 SHIMIZU, T.
 THERMAL NEUTRON ACTIVATION ANALYSIS OF TANTALUM IN
 SEA WATER,
 J. ATOMIC ENERGY SOC. JAPAN, 5, NO. 8, 662-665
 (1963), (JAPANESE) (ENGLISH SUMMARY), DEPT. CHEM.,
 FACULTY SCIENCE, TOKYO KYOIKU UNIV., JAPAN.
- 1128 HAMAGUCHI, H. * KURODA, R. * WATANABE, Y.
 TANTALUM CONTENTS OF DEEP SEA SEDIMENTS,
 NIPPON KAGAKU ZASSHI, 84, 723-726 (1963),
 (JAPANESE) (ENGLISH SUMMARY), DEPARTMENT OF
 CHEMISTRY, TOKYO KYOIKU UNIVERSITY, BUNKYO-KU,
 TOKYO, JAPAN.
- 1257 KAMEDA, K.
 STUDY ON ABUNDANCE OF RARE EARTH ELEMENTS IN
 MARINE ORGANISMS,
 J. RADIATION RES. (JAPAN), 3, 89-103 (JUNE 1962),
 (ENGLISH), JAPAN ATOMIC ENERGY RESEARCH INSTITUTE,
 TOKAI, IBARAGI PREF., JAPAN
- 1277 GIRARDI, F. * MERLINI, M.
 STUDIES ON THE DISTRIBUTION OF TRACE ELEMENTS IN A
 MOLLUSK FROM A FRESHWATER ENVIRONMENT BY
 ACTIVATION ANALYSIS,
 L'ANALYSE PAR RADIOACTIVATION ET SES APPLICATIONS
 AUX SCIENCES BIOLOGIQUES, PRESSES UNIVERSITAIRES
 DE FRANCE, 108, BLVD. SAINT-GERMAIN, PARIS, 6E,
 23-46 (1964), (ENGLISH), NUCLEAR CHEMISTRY AND
 BIOLOGY, ISPRA, ITALY.

OCEANOGRAPHY - ACCESSION NUMBERS

- 1385 HAMAGUCHI, H, * KURODA, R, * ONUMA, N, *
 KAWABUCHI, K, * MITSUBAYASHI, T, * HOSOHARA, K,
 THE GEOCHEMISTRY OF TIN,
 GEOCHIM, COSMOCHIM, ACTA, 28, 1039-1053 (1964),
 (ENGLISH), DEPARTMENT OF CHEMISTRY, TOKYO KYOIKU
 UNIVERSITY, TOKYO, OTSUKA, JAPAN.
- 1395 HORI, R,
 STUDIES ON THE PERMEABILITY OF SEA URCHIN PLASMA
 MEMBRANE BY NEUTRON ACTIVATION ANALYSIS,
 RADIOISOTOPES (TOKYO), 12, 115-119 (1963),
 (JAPANESE), TOYAMA UNIVERSITY, JAPAN,
- 1401 WAKITA, H, * KIGOSHI, K,
 ACTIVATION ANALYSIS OF THORIUM IN SHELLS,
 NIPPON KAGAKU ZASSHI, 85, 476-480 (1964),
 (JAPANESE), GAKUSHUIN UNIVERSITY, TOKYO, JAPAN,
- 1402 OKA, Y, * KATO, T, * SASAKI, M,
 DETERMINATION OF GOLD IN SEA WATER BY NEUTRON
 ACTIVATION ANALYSIS,
 NIPPON KAGAKU ZASSHI, 85, 643-647 (1964),
 (JAPANESE) (ENGLISH SUMMARY), TOHOKU UNIVERSITY,
 SENDAI, JAPAN,
- 1457 CORLESS, J.T, * WINCHESTER, J.W,
 VARIATIONS IN THE RATIO CA-48/(TOTAL CA) IN THE
 NATURAL ENVIRONMENT,
 PURE AND APPL, CHEM,, 8, NO, 3-4, 317-323 (1964),
 (ENGLISH), MIT, CAMBRIDGE, MASS,
- 1688 TUREKIAN, K.K,
 ANNUAL PROGRESS REPORT, DECEMBER 1, 1963-NOVEMBER
 30, 1964, GEOCHEMISTRY TECHNICAL REPORT 10,
 TID-21137, 30P., AUGUST 31, 1964, (ENGLISH),
 DEPARTMENT OF GEOLOGY, YALE UNIVERSITY, NEW HAVEN,
 CONN.
- 1727 MULLINS, W.T, * EMERY, J.F, * BATE, L.C, *
 LEDDICOTTE, G.W,
 APPLICATIONS OF NEUTRON-ACTIVATION ANALYSIS IN
 OCEANOGRAPHY,
 ORNL-3397, 105-106 (1963), (ENGLISH), OAK RIDGE
 NATIONAL LABORATORY, OAK RIDGE, TENN,

OCEANOGRAPHY - ACCESSION NUMBERS

- 1781 MERLINI, M.
 THE USE OF RADIOACTIVATION ANALYSIS IN BIOLOGY,
 EUR-128.I, 27P., 1962, (ITALIAN) (ENGLISH
 SUMMARY), EUROPEAN ATOMIC ENERGY COMMUNITY,
 NUCLEAR RESEARCH CENTER, ISPRA, ITALY.
- 1874 WINCHESTER, J.W. * DUCE, R.A.
 HALOGEN GEOCHEMISTRY,
 TECH. ENG. NEWS, 27-31 (MAY 1965), (ENGLISH),
 DEPARTMENT OF GEOPHYSICS, MIT, CAMBRIDGE, MASS.
- 1945 HOGDAHL, O.T.
 DISTRIBUTION OF THE RARE EARTH ELEMENTS IN
 SEA-WATER,
 NATO RESEARCH GRANT NO. 203, SEMIANNUAL PROGRESS
 REPORT NO. 2, OCTOBER 1, 1965 TO MARCH 31, 1966,
 43P., 7 FIGURES, APRIL 30, 1966, (ENGLISH),
 CENTRAL INSTITUTE FOR INDUSTRIAL RESEARCH, OSLO,
 BLINDERN, NORWAY.
- 1970 MIRO, M. * DE PADOVANI, I.O. * RAMOS, E. *
 DE VEGA, V.R. * LOWMAN, F.G.
 THE DETERMINATION OF STABLE SCANDIUM IN PLANTS,
 ANIMALS, SEDIMENTS, SANDS, SOILS, ROCKS AND
 MINERALS BY NEUTRON ACTIVATION ANALYSIS,
 ANAL. CHIM. ACTA, 35, NO. 1, 54-60 (1966),
 (ENGLISH) (FRENCH AND GERMAN SUMMARIES), PUERTO
 RICO NUCLEAR CENTER, MAYAGUEZ, PUERTO RICO.
- 2546 KEISCH, B. * KOCH, R.C. * LEVINE, A.S.
 DETERMINATION OF BIOSPHERIC LEVELS OF I-129 BY
 NEUTRON-ACTIVATION ANALYSIS,
 PROCEEDINGS 1965 INTERNATIONAL CONFERENCE, MODERN
 TRENDS IN ACTIVATION ANALYSIS, COLLEGE STATION,
 TEXAS, 284-290, APRIL 19-22, 1965, (ENGLISH),
 NUCLEAR SCIENCE AND ENGINEERING CORPORATION,
 PITTSBURGH, PA.
- 2732 STEVENSON, R.A. * UFRET, S.L. * DIECIDUE, A.T.
 TRACE ELEMENT ANALYSES OF SOME MARINE ORGANISMS,
 FIFTH INTER-AMERICAN SYMPOSIUM ON THE PEACEFUL
 APPLICATION OF NUCLEAR ENERGY, WASHINGTON, D.C.,
 PAN AMERICAN UNION, 233-239, 1965, (ENGLISH),
 PUERTO RICO NUCLEAR CENTER, MAYAGUEZ, PUERTO RICO.

OCEANOGRAPHY - ACCESSION NUMBERS

- 2848 SLOWEY, J.F. * HEDGES, D.H. * HOOD, D.W.
 THE CHEMISTRY AND ANALYSIS OF TRACE METALS IN SEA
 WATER, PROGRESS REPORT NO. 2, AUGUST 1,
 1961-NOVEMBER 1, 1962,
 TID-22660, 70P., OCTOBER 31, 1962. (ENGLISH),
 DEPARTMENT OF OCEANOGRAPHY AND METEOROLOGY, TEXAS
 A AND M, COLLEGE STATION, TEXAS.
- 2973 HORI, R.
 THE ACTIVATION ANALYSIS OF SODIUM AND POTASSIUM IN
 BIOLOGICAL MATERIAL,
 RADIOISOTOPE SAMPLE MEASUREMENT TECHNIQUES IN
 MEDICINE AND BIOLOGY, IAEA, VIENNA, 259-264,
 1965. (ENGLISH) (FRENCH, RUSSIAN AND SPANISH
 SUMMARIES), BIOLOGICAL INSTITUTE, TOYAMA
 UNIVERSITY, TOYAMA, JAPAN.
- 2984 RAO, S.R. * KHAN, A.A. * KAMATH, P.R.
 STABLE STRONTIUM IN SEA WATER BY ACTIVATION
 TECHNIQUE,
 PROCEEDINGS OF THE NUCLEAR AND RADIATION CHEMISTRY
 SYMPOSIUM, 1964, TROMBAY, INDIA, ATOMIC ENERGY
 ESTABLISHMENT, 199-204, 1965. (ENGLISH), HEALTH
 PHYSICS DIVISION, ATOMIC ENERGY ESTABLISHMENT
 TROMBAY, BOMBAY, INDIA.
- 3960 TUREKIAN, K.K. * JOHNSON, D.G.
 THE BARIUM DISTRIBUTION IN SEA WATER
 GEOCHIM. COSMOCHIM. ACTA, 30, 1153-1174 (NOV,
 1966). (ENGLISH), DEPARTMENT OF GEOLOGY, YALE
 UNIVERSITY, NEW HAVEN, CONNECTICUT.
- 3969 TUREKIAN, K.K.
 TRACE ELEMENTS IN SEA WATER AND OTHER NATURAL
 WATERS,
 YALE-2912-12, 60P., AUGUST 31, 1966. (ENGLISH),
 YALE UNIVERSITY, DEPARTMENT OF GEOLOGY.
- 4219 HAYES, D.W. * SLOWEY, J.F. * HOOD, D.W.
 RARE EARTH DISTRIBUTION IN WATERS OF GULF OF
 MEXICO,
 TID-23295, SECT. 4, 112P., UNDATED. (ENGLISH),
 USA.

OCEANOGRAPHY - ACCESSION NUMBERS

- 4244 CAPPADONA, C.
ACTIVATION ANALYSIS, RAPID DETERMINATION OF GOLD
IN SEAWATER,
ATTI ACCAD. SCI. LETTERE ARTI PALERMO, PT. 1, 24,
71-74 (1963/64), (ITALIAN) (ENGLISH AND FRENCH
SUMMARIES), ISTITUTO DI APPLICAZIONI E IMPIANTI
NUCLEARI DELL UNIVERSITA DI PALERMO, ITALY.
- 4255 DIXON, B.W. * SLOWEY, J.F. * HOOD, D.W.
NEUTRON ACTIVATION ANALYSIS OF RUTHENIUM IN SEA
WATER,
TID-23295, SECT. 3, 22P, UNDATED, (ENGLISH), TEXAS
A AND M UNIVERSITY, COLLEGE STATION, TEXAS.
- 4291 SLOWEY, J.F.
STUDIES ON THE DISTRIBUTION OF COPPER, MANGANESE
AND ZINC IN THE OCEAN USING NEUTRON ACTIVATION
ANALYSIS,
TID-23295, SECT. 2, 113P., UNDATED, (ENGLISH),
USA.
- 4381 ROBERTSON, D.E. * PERKINS, R.W.
TRACE ELEMENTS AND CS-137 IN SEA WATER BY
GAMMA-RAY SPECTROMETRIC TECHNIQUES,
BNWL-SA-674, 10P., AUGUST 31, 1966. (ENGLISH),
USA.
- 5359 HOGDAHL, O.T.
DISTRIBUTION OF THE RARE EARTH ELEMENTS IN SEA
WATER,
NATO RESEARCH GRANT NO. 203 SEMIANNUAL PROGRESS
REPORT NO. 4, OCTOBER 1, 1966 TO MARCH 31, 1967,
34P., 11 FIGURES, APRIL 29, 1967, (ENGLISH),
OSLO, BLINDERN, NORWAY.
- 5387 LOWMAN, F.G.
APPLICATIONS OF NUCLEAR SPECTROSCOPY,
I CONFERENCIA DE ESPECTROSCOPIA NUCLEAR Y FISICA
DEL ESTADO SOLIDO, 49-52 (1964), (ENGLISH),
PUERTO RICO NUCLEAR CENTER, MAYAGUEZ, PUERTO RICO.
- 5726 FURUHASHI, N. * UEMURA, T.
QUANTITATIVE ACTIVATION ANALYSIS OF THE IMPURITIES
IN A CULTURE PEARL,
OSAKA FURITSU KOGYO-SHOKEIKAN HOKOKU, NO. 39,
46-49 (JULY 1966), (JAPANESE) (ENGLISH SUMMARY),
INDUSTRIAL RESEARCH INSTITUTE OF OSAKA PREFECTURE,
JAPAN.

OCEANOGRAPHY - ACCESSION NUMBERS

- 5746 BABB, A.L. * MILLER, W.P. * WILSON, W.E., JR. *
 WOODRUFF, G.L. * NOVOTNY, A.J.,
 NEUTRON ACTIVATION ANALYSIS OF STABLE DYSPROSIUM
 BIOLOGICALLY DEPOSITED IN THE BONE OF CHINOOK
 SALMON FINGERLINGS,
 TRANS. AMER. NUCL. SOC., 10, 449 (NOVEMBER 1967),
 (ENGLISH), UNIVERSITY OF WASHINGTON AND U.S.
 BUREAU COMMERCIAL FISHERIES,
- 5771 LANDSTROM, O. * SAMSAHL, K. * WENNER, C.G.,
 AN INVESTIGATION OF TRACE ELEMENTS IN MARINE AND
 LACUSTRINE DEPOSITS BY MEANS OF A NEUTRON
 ACTIVATION METHOD,
 AE-296, 40P., OCTOBER 1967, (ENGLISH),
 AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN,
- 5776 SHIGEMATSU, T. * FUJINO, U. * HONJO, T.,
 NON-DESTRUCTIVE DETERMINATION OF SILICON (SILICA)
 IN MARINE SEDIMENTS BY FAST NEUTRON ACTIVATION,
 BULL. INST. CHEM. RES., KYOTO UNIV., 45, NO. 4-5,
 299-306 (1967), (ENGLISH), SHIGEMATSU
 LABORATORY, JAPAN,
- 5777 SHIGEMATSU, T. * TABUSHI, M. * AOKI, T. * FUJINO, O.
 * NISHIKAWA, Y. * GODA, S.,
 ACTIVATION ANALYSIS OF LANTHANUM AND EUROPIUM IN
 SEA WATER AND LAKE WATER,
 BULL. INST. CHEM. RES., KYOTO UNIV., 45, NO. 4-5,
 307-317 (1967), (ENGLISH), SHIGEMATSU
 LABORATORY, JAPAN,
- 5873 HOGDAHL, O.T.,
 DISTRIBUTION OF THE RARE EARTH ELEMENTS IN SEA
 WATER,
 NATO RESEARCH GRANT NO. 203, SEMIANNUAL PROGRESS
 REPORT NO. 5, 1-25, APRIL 1, 1967 TO SEPT. 30,
 1967. (ENGLISH), CENTRAL INSTITUTE FOR
 INDUSTRIAL RESEARCH, OSLO, BLINDERN, NORWAY,
- 6023 LUNDE, G.,
 ACTIVATION ANALYSIS OF BROMINE, IODINE AND ARSENIC
 IN OILS FROM FISHES, WHALES, PHYTO- AND
 ZOOPLANKTON OF MARINE AND LIMNETIC BIOTOPES,
 INT. REV. GESAM. HYDROBIOL., 52, 265-279 (1967),
 (ENGLISH), CENTRAL INSTITUTE FOR INDUSTRIAL
 RESEARCH, OSLO, NORWAY,

OCEANOGRAPHY - ACCESSION NUMBERS

- 6208 BENNETT, J.H. * MANUEL, O.K.
 IODINE ABUNDANCES IN DEEP-SEA SEDIMENTS,
 J. GEOPHYS. RES., 73, 2302-2303 (MARCH 15, 1968),
 (ENGLISH), CHEMISTRY DEPARTMENT, UNIVERSITY OF
 MISSOURI, ROLLA, MISSOURI.
- 6228 HOGDAHL, O.T.
 DISTRIBUTION OF THE RARE EARTH ELEMENTS IN SEA
 WATER,
 NATO RESEARCH GRANT NO. 203, SEMIANNUAL PROGRESS
 REPORT NO. 6, OCTOBER 1, 1967 TO MARCH 31, 1968,
 23P., APRIL 30, 1968, (ENGLISH), CENTRAL
 INSTITUTE FOR INDUSTRIAL RESEARCH, OSLO, BLINDERN,
 NORWAY.
- 6348 DOSHI, G.R.
 ALKALINE EARTH PHOSPHATE AS CARRIER FOR THE
 DETERMINATION OF TRACE ELEMENTS IN SEAWATER,
 INDIAN J. CHEM., 5, 580-581 (NOVEMBER 1967),
 (ENGLISH), HEALTH PHYSICS DIVISION, BHABHA ATOMIC
 RESEARCH CENTRE TROMBAY, BOMBAY, INDIA.
- 6375 ROBERTSON, D.E. * RANCITELLI, L.A. * PERKINS, R.W.
 MULTIELEMENT ANALYSIS OF SEAWATER, MARINE
 ORGANISMS AND SEDIMENTS BY NEUTRON ACTIVATION
 WITHOUT CHEMICAL SEPARATIONS,
 BNWL-SA-1776, 74P., MAY 15, 1968, (ENGLISH),
 BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST
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- 6455 LIVINGSTON, H.D. * BOWEN, V.T.
 ACTIVATION ANALYSIS OF LANTHANIDE ELEMENTS IN
 MODERN CORALS, GERMANIUM DETECTOR PROCEDURES,
 NYO-2174-70, 18P., APRIL 1968, (ENGLISH), WOODS
 HOLE OCEANOGRAPHIC INSTITUTION, WOODS HOLE,
 MASSACHUSETTS.
- 6823 TUREKIAN, K.K.
 TRACE ELEMENTS IN NATURAL WATERS,
 YALE-2912-20, 31P., AUGUST 31, 1968, (ENGLISH),
 DEPARTMENT OF GEOLOGY AND GEOPHYSICS, YALE
 UNIVERSITY, NEW HAVEN, CONNECTICUT.
- 6843 WILKNISS, P.E. * LINNENBOM, V.J.
 THE DETERMINATION OF FLUORINE IN SEAWATER BY
 PHOTON ACTIVATION ANALYSIS,
 LIMNOL. OCEANOGR., 13, NO. 3, 530-533 (JULY 1968),
 (ENGLISH), NAVAL RESEARCH LABORATORY,
 WASHINGTON, D.C.

OCEANOGRAPHY - ACCESSION NUMBERS

- 6924 DE GROOT, A.J, * ZSCHUPPE, K.H, * DE BRUIN, M, *
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 ACTIVATION ANALYSIS APPLIED TO SEDIMENTS FROM
 VARIOUS RIVER DELTAS,
 NBS SPEC. PUBL, 312, VOL, I, MODERN TRENDS IN
 ACTIVATION ANALYSIS, 62-71, JUNE 1969, (ENGLISH),
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 D.C,
- 6965 LANDSTROM, O, * SAMSAHL, K, * WENNER, C.G,
 AN INVESTIGATION OF TRACE ELEMENTS IN MARINE AND
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 ACTIVATION ANALYSIS, 353-366, JUNE 1969,
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- 6969 MILLARD, H.T., JR,
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 NBS SPEC. PUBL, 312, VOL, I, MODERN TRENDS IN
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- 6982 MERLINI, M, * RAVERA, O, * BIGLIOCCA, C,
 NONDESTRUCTIVE DETERMINATION OF ELEMENTS IN
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 NBS SPEC. PUBL, 312, VOL, I, MODERN TRENDS IN
 ACTIVATION ANALYSIS, 475-481, JUNE 1969,
 (ENGLISH), EURATOM JOINT RESEARCH CENTER, ISPRA,
 ITALY,
- 7095 BOWEN, H.J.M,
 THE UPTAKE OF GOLD BY MARINE SPONGES,
 J. MAR. BIOL. ASSN. U.K., 48, 275-277 (JUNE 1968),
 (ENGLISH), CHEMISTRY DEPARTMENT, UNIVERSITY OF
 READING, BERKS,

OCEANOGRAPHY - ACCESSION NUMBERS

- 7294 ODA, T.
 DETERMINATION OF RARE EARTH ELEMENTS IN HOT SPRING
 WATER BY RADIOACTIVATION METHOD,
 RADIOISOTOPES (TOKYO), 18, 39-43 (FEBRUARY 1969),
 (JAPANESE) (ENGLISH SUMMARY), THE INSTITUTE OF
 BALNEOTHERAPEUTICS, KYUSHU UNIVERSITY, JAPAN.
- 7921 NEUBERGER, M. * FOURCY, A.
 STUDY OF THE RUTHENIUM PARTITION IN AN ECOLOGICAL
 POND USING NEUTRON ACTIVATION ANALYSIS,
 INTERN. J. APPL. RADIATION ISOTOPES, 20, NO. 9,
 641-651 (1969), (FRENCH) (ENGLISH, RUSSIAN AND
 GERMAN SUMMARIES), LABORATOIRE DE BIOLOGIE
 VEGETABLE, CENTRE D ETUDES NUCLEAIRES DE GRENOBLE,
 COMMISSARIAT A L ENERGIE ATOMIQUE, GRENOBLE,
 FRANCE.
- 7935 PIPER, D.Z. * GOLES, G.G.
 DETERMINATION OF TRACE ELEMENTS IN SEAWATER BY
 NEUTRON ACTIVATION ANALYSIS,
 ANAL. CHIM. ACTA, 47, NO. 3, 560-563 (1969),
 (ENGLISH), SCRIPPS INSTITUTION OF OCEANOGRAPHY
 AND UNIVERSITY OF CALIFORNIA, LA JOLLA, CALIF.
- 7975 FISHER, D.E. * BOSTROM, K.
 URANIUM RICH SEDIMENTS ON THE EAST PACIFIC RISE,
 NATURE, 224, NO. 5214, 64-65 (OCTOBER 4, 1969),
 (ENGLISH), INSTITUTE OF MARINE SCIENCES,
 UNIVERSITY OF MIAMI, MIAMI, FLORIDA.
- 8018 WIGGINS, P.F. * SENFLE, F.E. * DUFFEY, D.
 CALIFORNIUM-252 AS A NEUTRON SOURCE FOR MARINE
 EXPLORATION,
 TRANS. AMER. NUCL. SOC., 12, NO. 2, 492 (NOVEMBER
 1969), (ENGLISH), U.S. NAVAL ACADEMY, U.S.
 GEOLOGICAL SURVEY AND UNIVERSITY OF MARYLAND.
- 8074 GOLDBERG, E.D. * KOIDE, M. * SCHMITT, R.A. *
 SMITH, R.H.
 RARE EARTH DISTRIBUTIONS IN THE MARINE
 ENVIRONMENT,
 J. GEOPHYS. RES., 68, NO. 14, 4209-4217 (JULY 15,
 1963), (ENGLISH), UNIVERSITY OF CALIFORNIA AT
 SAN DIEGO, LA JOLLA AND GENERAL ATOMIC DIVISION,
 SAN DIEGO, CALIF.

OCEANOGRAPHY - ACCESSION NUMBERS

- 8140 ROBERTSON, D.E. * PROSPERO, J.M.
TRACE ELEMENT CONCENTRATIONS IN ATLANTIC OCEAN
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BNWL-1051 (PART 2), 53-58, JUNE 1969, (ENGLISH),
BATTELLE NORTHWEST, PACIFIC NORTHWEST LABORATORY,
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- 8141 ROBERTSON, D.E.,
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- 8146 RANCITELLI, L.A. * TANNER, T.M. * DEAN, J.M.,
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(ENGLISH), BATTELLE NORTHWEST, PACIFIC NORTHWEST
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- 8147 RANCITELLI, L.A.,
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BNWL-1051 (PART 2), 152-155, JUNE 1969,
(ENGLISH), BATTELLE NORTHWEST, PACIFIC NORTHWEST
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- 8196 LIVINGSTON, H.D. * THOMPSON, G.,
TRACE ELEMENT CONCENTRATIONS IN SOME MODERN
CORALS,
NYO-2174-96, 28P., MAY 1969, (ENGLISH), WOODS
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OCEANOGRAPHY - ELEMENT DETERMINED

ALUMINUM

961

ANTIMONY

614 4381 5771 6375 6965 7935 8140 8141 8146 8147 8148

ARSENIC

165 409 475 758 1727 5771 6023 6924 6965

BARIUM

614 723 1727 3960

BROMINE

5771 6023 6375 6965 8146 8147 8148

CADMIUM

1277

CALCIUM

3969 5771 6936 6965 6982 8196

CALCIUM-48

1457

CERIUM

5771 6965 8141 8196

CESIUM

477 614 1727 4381 5771 6375 6965 7935 8140 8146 8147 8148

CHROMIUM

614 1277 5771 6823 6924 6965 7935 8141 8146 8147 8148 8196

COBALT

470 471 614 1094 1277 1688 1727 3969 4381 5771 6348 6375
6965 6969 7935 8140 8141 8146 8147 8148 8196

OCEANOGRAPHY - ELEMENT DETERMINED

COPPER

470 471 1688 2848 4291 6375 6924 8141

DYSPROSIUM

757 5746

EUROPIUM

5771 5777 6965 8141 8196

FLUORINE

6843

GALLIUM

5771 6965

GOLD

165 235 409 614 758 1277 1402 1727 4244 7095

HAFNIUM

9 212 614 5771 6965 8141

INDIUM

1727

IODINE

6023 6208

IODINE-129

2546

IRIDIUM

9 1727 6969

IRON

614 961 1277 5771 6375 6965 6969 7935 8140 8141 8146 8147
8148 8196

OCEANOGRAPHY - ELEMENT DETERMINED

LANTHANUM

5771 5777 6375 6924 6965 8141 8196

LUTETIUM

5771 6965

MAGNESIUM

961 6936

MANGANESE

422 586 1277 1781 2848 4291 5726 5771 6375 6924 6936 6965
6969 6982 8141

MERCURY

614 1277 5771 6375 6965 8146 8147 8148

MOLYBDENUM

165 409 758 1727 6823

NICKEL

470 471 614 616 1688 1727 6969

POTASSIUM

1395 2973 6375 6982 8146 8147 8148

RHENIUM

165 409 758 1727

RUBIDIUM

477 614 1727 5771 6375 6965 7935 8146 8147 8148

RUTHENIUM

4255 7921

SAMARIUM

5771 6924 6965

OCEANOGRAPHY - ELEMENT DETERMINED

SCANDIUM

614 1277 1727 1970 2732 4381 5771 6375 6924 6965 7935 8140
8141 8146 8147 8148 8196

SELENIUM

614 5771 6375 6965 8146 8147 8148

SILICON

961 5776

SILVER

614 1277 1688 3969 8146 8147 8148

SODIUM

961 1395 2973 5726 5771 6375 6936 6965 6982 8141 8146 8147
8148

STRONTIUM

236 614 723 1277 1727 2984 5771 6375 6936 6965 7935 8140
8141

TANTALUM

9 614 1127 1128 5771 6965

TERBIUM

5771 6965

THORIUM

1277 1401 5771 6965 8141

TIN

1125 1385

TUNGSTEN

165 409 758 1727 5771 6965

OCEANOGRAPHY - ELEMENT DETERMINED

URANIUM

492 1727 3969 4381 5771 6375 6965 7975 8140 8196

VANADIUM

165 409 758 1727

YTTERBIUM

8141

ZINC

586 614 1277 2848 4291 6348 6375 6924 7935 8140 8146 8147
8148 8196

ZIRCONIUM

9 212 614

RARE EARTHS

1257 1945 4219 5359 5873 6228 6455 7294 8074

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OCEANOGRAPHY - MATRIX ANALYZED

ALGAE

723 2732

CORAL

723 3969 6455 8196

CRUSTACEANS

164 165 409 1781 6936

FISH

164 165 409 757 1257 5746 6023 6375 8146 8147 8148

MARINE ORGANISMS, GENERAL

758 1727 6375 7921

MARINE SEDIMENTS

9 212 470 471 477 616 1094 1128 1385 1457 1727 1970 5771
5776 5873 6208 6375 6823 6924 6965 6969 7975 8141

MOLLUSKS

164 165 409 723 1277 1401 1457

PEARL

5726

PLANKTON

6023 6982

SEA-URCHIN EGGS

1395 2973

SEAWEED

164 165 409 477 1257 2546

OCEANOGRAPHY - MATRIX ANALYZED

SEAWATER

164	235	236	422	475	477	492	586	614	723	1125	1127	1385	1402
1457	1688	1727	1945	2848	2984	3960	4219	4244	4255	4291	4381		
5359	5777	5873	6228	6348	6375	6823	6843	7294	7935	8074	8140		

SPONGE

7095

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9 212 235 236 409 422 470 475 586 614 1257 1277 1401 1945
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164 212 614 723 1094 3960 4291 6228 6375 6823

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DISCUSSION OF SAMPLING, PROBLEMS OF CONTAMINATION OR LOSS
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MULTIELEMENT ANALYSIS WITH GE(LI) OR MULTIPARAMETER DETECTORS

4381 6375 6455 6936 6969 7935 8140 8141 8146 8147 8148 8196

PHOTON ACTIVATION ANALYSIS

6843

PRECONCENTRATION OF SEAWATER SAMPLES

422 586 614 723 1127 1385 1945 2984 3960 4219 4255 4291
5777 5873 6348 8074 8140

REMOTE IN SITU ANALYSIS

204 961 8018

STABLE TRACERS

5746

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Springfield, Virginia 22151

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